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SAS 39: A Pragmatic Approach

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SAS 39

A Pragmatic Approach

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Audit risk may be defined as the probability of issuing an inappropriate or incorrect opinion on financial statements because material errors or irregularities were not detected. Audit risk could also include the possibility of disclaiming an opinion when, in fact, the economic circumstances did not reasonably support such an audit conclusion. The objective of this article is to segregate audit risk into risk determinants, analyze these factors in terms of controllable and noncontrollable components, and discuss the implication of SAS Number 39 as a guide for the auditor in evaluating audit risk.

Ultimate Risk

Ultimate risk is the risk that the monetary error is greater than the tolerable error (materiality level) in the balance and/or classification, that it will not be detected by the auditor and that an inappropriate conclusion may be reached. Ultimate risk may be aggregated into two components. The first is the likelihood of a material error occurring. The second is that material errors that occur will not be detected in the auditor's examination.

Why errors occur.

There are four major factors that cause material error to occur and these are primarily uncontrollable by the auditor. These factors are (1) management's integrity at upper levels, (2) relative strength of the client's system of internal accounting control, (3) capable personnel, (4) the economic condition of the entity.

The integrity of a client's top management is probably more important than any other factor in assessing the risk that a material error will not be discovered on a timely basis. The potential for the override of internal controls must always be considered since management deception and collusion is an avenue to perpetuate misreporting of financial information. The courts have indeed recognized the importance of a strong system of internal accounting control. For example, in the Ultramares case, the auditors were deceived by an overstatement of receivables. In following the accepted audit procedures then in practice, the auditors confined their investigation to evidence created and/or held by the client, such as sales invoices, sales journals, cash receipts journals, etc. When the overstatement was discovered a third-party creditor filed suit for both negligence and fraud. The more recent Hochfelder case also displays the importance of a good internal control system and justifies concern about management override. Adherence to a presidential "mail rule" in which no one except the president opened mail addressed directly to him permitted a fraud which eventually caused a damage suit against the auditors by the injured third parties.

Management has a wide range of incentives to misrepresent financial information. Individually and collectively, management personnel are motivated by factors ranging from perceived increased job security to the maintenance of high stock prices. Assessing the reliability of the client's system of internal accounting control is a major factor in concluding on the fair presentation of financial condition. As accounting systems become more complex, often arising from growth or a need to comply with regulatory agencies, understanding and evaluating the systems becomes more important in assessing the probability of material error. As a result, many public accounting firms now place greater emphasis on internal accounting control evaluation. Most notably, a shift to a transactions flow approach is being emphasized rather than the traditional emphasis on substantive testing.

Managers and internal auditors are interested in the reliability of information generated from the corporate system. Indeed, their interest is much broader than that of the independent auditor who is concerned primarily with the reliability of financial information. Management's responsibility includes establishing and maintaining a system of internal control. Internal auditors are responsible for evaluating the system of internal accounting control as a service to management. For the independent auditor, how management and internal audit discharge their duties impacts audit risk and audit fees billed to the client.

The independent auditor must be diligent, thorough and precise in determining how effectively the internal accounting control system was operating throughout the audit period. In addition, the auditor must always be conscious (e.g., professional skepticism) of the possibility that the system of internal accounting control has been overridden by top management.

Management has a wide range of incentives to misrepresent financial information.

The third factor is capable personnel. Like the previous two factors, management integrity and strength of the internal accounting control system, it is very important and very difficult to evaluate. Auditors have very limited means for discovering whether client personnel, other than top management, possess "a degree of quality commensurate with responsibilities." The best design of a system of internal accounting control may not be reliable if the personnel are not competent in performing their assigned tasks. Generally, the best that the auditor can do is to identify the very capable people and those that are extremely incapable. Since these are extremes and do not represent the majority of a firm's personnel, one suggested means of assessing client proficiency is to observe and audit the output generated by the client's employees. The results may be used as evidence of the quality of their work and indirect evidence of their abilities. Note that this may be performed in conjunction with compliance testing.

The dynamic economic environment in which the client operates must not only be understood by the auditor, but also impact the decision of appropriate audit testing to be employed. Industry characteristics are important. Yet, coupled with them, the auditor should consider factors associated with the geographic location of the entity. Additionally, federal, state and local economic and regulatory policies need to be assessed. Quick changes in the economic evironment and/or the industry may place additional economic pressure on the auditor's client. This increased pressure will result in a higher audit risk. In today's economic environment many questions may arise about an entity's ability to continue operating as a going concern. Therefore, additional procedures may be required to search for mitigating factors as prescribed by SAS No. 34.

The Auditor's Considerations When a Question Arises About an Entity's Continued Existence.

Why errors go undetected?

There are two major factors that may cause material error to be undetected. Since these factors are directly controllable by the auditor, they are of particular interest. The two factors are: sampling risk and nonsampling risk.

Sampling risk is the risk that the auditor may fail to detect a material error because a 100 percent audit of transactions is not feasible. Statistically, sampling risk depends on the levels of audit materiality, desired tolerable error and an allowance for sampling risk (precision), sample size, and the desired confidence level.

Evaluation of the results of a substantive test in monetary terms requires the auditor's judgment of the dollar amounts of errors that are material. In planning for a substantive test of details, the auditor needs to consider the monetary error in the related account balance or class of transactions that may exist before the financial statements are materially misstated. This maximum error is called tolerable error for the sample. SAS Number 39, *Audit Sampling*, defines tolerable error as a planning concept. It is related to the auditor's preliminary estimates of materiality levels in that the combined tolerable error for the entire audit plan should not exceed preliminary estimates.

Unfortunately, there exists no objective means for determining sampling risk in judgmental, nonrandomly selected samples. Sampling risk is quantifiable and controllable, however, when statistical sampling techniques are used. The auditor can adjust the sample size to achieve a desired risk level, given a tolerable error level and audit materiality value.

Note that nonsampling risk is the risk that the auditor may fail to detect a material error because of inherent problems associated with the interpretation or accumulation of test results. Therefore, the auditor should take special care when summarizing and interpretating the sample results.

SAS Number 39, *Audit Sampling*, provides guidance in formalizing sampling procedures, specifically in making inferences from samples to populations. The samples may be statistical or nonstatistical as long as they are random representations of the population. The auditor's judgment is of paramount importance regardless of the sampling method that is chosen. In addition to recognizing the importance of audit judgment, SAS Number 39 provides guidance for dealing with audit risk, and provides guidance for a formalized defense of the auditor's opinion.

Comparison of SAS No. 1, Sec. 320 B.35 With SAS No. 39

SAS Number 39 identifies the risk of issuing an inappropriate audit opinion as the key area of concern. Alternatively, SAS Number 1, Sec. 320 B.35 highlights the reliabiiity of issuing a particular audit opinion. SAS Number 1, Sec. 320 B.35 can be summarized as follows:

(1-R) = (1-S) (1-C) (ME), defined as

- S = Reliability level for substantive tests meaning the percentage of times the sample will accurately represent the population.
- R – Combined reliability level desired. (1-R = risk)
- C = Reliance assigned to internal accounting control and other relevant factors.
- ME = The liklihood of material error. This is subjectively assigned and may range between values of 0 and 1.0.

For model purposes, if ME = 1, the resulting equation would be

(1-R) = (1-S) (1-C).

For example if .95 is determined by the auditor to be the predetermined reliability level this would mean that the risk due to the likelihood of a material error occurring would be 5 percent. After an evaluation of internal accounting control using either statistical or nonstatistical techniques, substantive testing is determined as follows:

$$S = 1 - \frac{(1-R)}{(1-C)}$$

This is exemplified as follows:

TABLE I

Compliance and IC risk (1-C)	Substantive test - risk (1-S)
.10	.50
.30	.17
.50	.10
.70	.07

(1-R) = .05

Table I implies that if the auditor desires a total audit risk of .05, he has the option of accepting a (1-S) substantive risk of .50 and a (1-C) internal control evaluation of .10 or vice versa. Note that ultimately the combination chosen relies upon audit judgment.

The following model expresses the general relationship of the risks associated with the auditor's evaluation of internal accounting controls, substantive tests of details, and analytical review procedures and other relevant substantive tests under SAS Number 39,

$$UR = IC \times AR \times TD.$$

UR = The allowable ultimate risk that monetary errors equal to tolerable error might remain undetected in the account balance or class of transactions after the auditor has completed all audit procedures deemed necessary.

TE = The maximum monetary error for the balance or class is called tolerable error for the sample (e.g., sample materiality).Tolerable error is a planning concept and is related to the auditor's preliminary estimates of materiality levels in such a way that tolerable error for the entire plan does not exceed these limits.

TR = The maximum rate of deviations from a prescribed control procedure that the auditor would be willing to accept without altering his planned reliance on the control (e.g., sample materiality). This is the tolerable rate.

IC = The auditor's assessment of the risk that, given that errors occur, the system of internal accounting control fails to detect them, whether because of poorly designed controls or lack of compliance. The auditor would assign this risk for control procedures on which he intends to rely in establishing the scope of the substantive test of details. The quantification for this model relates to the auditor's evaluation of the overall effectiveness of those internal accounting controls that would prevent or detect material errors equal to tolerable error in the related account or balance or class of transactions. For example, if the auditor believes that pertinent controls would prevent or detect errors equal to tolerable error about half the time, he would assess this risk as 50 percent.

AR = The auditor's assessment of the risk that analytical review procedures and other relevant substantive tests would fail to detect errors equal to tolerable error, given that such errors occur and are not detected by the system of internal accounting control.

TD = The allowable risk of incorrect acceptance for the substantive test of details, given that errors equal to tolerable error occur and are not detected by the system of internal accounting control or analytical review procedures and other relevant substantive tests.

Table II illustrates the use of statistical sampling:

TABLE II

Allowable Risk of Incorrect Acceptance (TD)
for Various Assessments of IC and AR for UR = .05

Auditor's subjective assessment of risk that internal accounting control might fail to detect aggregate errors equal to tolerable error.	Auditor's subjective assessment of risk that analytical review procedures and other relevant substantive tests might fail to detect aggregate errors equal to tolerable error.			
IC	AR			
	10%	30%	50%	100%
	TD			
10%	-	-	-	50%
30%	-	55%	33%	16%
50%	-	33%	20%	10%
100%	50%	16%	10%	5%

*The allowable level of UR of 5% exceeds the product of IC and AR, and, thus, the planned substantive test of details may not be necessary.

Note: Table entries for TD are computed from the illustrative model: TD equals UR/ (IC × AR). For example, for IC = .50 and AR = .30, TD = .05/ (.50 × .30) or .33 (equals 33%).

The auditor should use this model to obtain an understanding of an appropriate risk of incorrect acceptance of details. The SAS Number 39 model fits the use of statistical sampling techniques. Yet, auditors who elect to use nonstatistical sampling might use the model to formulate audit plans by establishing an ultimate risk level and then, by use of judgment samples, estimates the values for IC and AR. The values would be in terms of high, medium and low risk. For example if IC = .10 and AR = .10, a lower level of substantive testing would be required than if IC = .50 and AR = .25. This type of audit plan is legally more defensible than an audit plan which does not incorporate a model in the decision process.

If the model is used for statistical sampling certain benefits inherent in the use of statistics will be received. These include:

1. More efficient sample size.
2. The sufficiency of the evidential matter obtained is measurable.
3. Results are easier to evaluate objectively, because of the mathematical conclusions.
4. Overall, conclusions are mathematically defensible.

In both nonstatistical and statistical use of the model relative relationships of the various elements of audit risk are most important. For example, in Table II, if IC = .10 and AR = .10 with UR = .05, the allowable risk of incorrect acceptance is greater than .55 and theoretically no substantive testing is required. This condition exists because the calculated UR, which is the multiplicative product of IC = .10 and AR = .10, is .01. This is less than the acceptable UR of .05. A prudent auditor would still perform some substantive testing because of the inherent limitations of the model, and other SAS requirements. The main point is that a minimal amount of testing is appropriate because of the low risk factors assigned to internal accounting control, analytical review and other substantive tests.

Alternatively, if IC = .50 and AR = .50 more substantive testing is need-

ed for the allowable risk of incorrect acceptance of TD = .20. This means that the auditor should be less willing to accept the risk of material errors and irregularities in planning substantive tests. Sample size should be increased, accordingly. Below is another approach to explaining SAS No. 39.

DIAGRAM DESCRIPTION

SAS Number 39 can be explained through the use of the accompanying flow diagrams. The topics of the SAS have been segregated into four areas for explanatory purposes: Decision to Test and Approach to Testing, Purpose of Testing, Planning the Tests, and Directions for a Statistical Sampling Approach. Each of the diagrams will now be discussed in detail.

Decision to Test and Approach to Testing

In Diagram A the decision to test and manner of testing used begins with the identification of audit objectives. First, the auditor decides what assurances must be obtained to support the expression of an audit opinion. Then, it must be determined whether or not a test basis approach will produce sufficient evidence to provide these assurances. If a test basis approach will not provide sufficient evidence, then all of the data is examined.

When the auditor determines that a test basis approach can provide sufficient, competent evidential matter certain considerations are addressed prior to, or concurrently with, performing audit procedures. The likelihood that the client's system of internal control or supplementary audit procedures will not identify items which could cause the financial statements to be misleading is assessed by the auditor. This assessment may be performed in various ways, but whether the approach is formal or informal it relies heavily on professional judgment.

Another consideration which the auditor addresses is Beta Risk, or the risk of overreliance. Beta Risk, along with the internal control and supplementary procedures described above composes Ultimate Risk. Ultimate Risk, the Risk of Audit failure, was defined earlier and shown in equation form. Beta risk is the risk that, based on sample results, an auditor will conclude that a financial statement number is fair when in fact it is false, as previously defined. Again, as with the internal control and supplementary audit procedure considerations, the approach to assessing Beta Risk may be formal or informal. In fact, Beta Risk may be mathematically derived. Ultimately, professional audit judgment still affects mathematically calculated risk.

After determining the levels of all the components of Ultimate Risk, and the resulting Ultimate Risk, the auditor decides whether it is acceptable. Usually, this acceptability is determined by comparing the calculated Ultimate Risk to the level the auditor has predetermined as acceptable for this particular engagement. If the existing Ultimate Risk is acceptable, the auditor can continue with planned steps. If the Ultimate Risk is unacceptable the auditor takes steps to reduce it to an acceptable level. Reducing Ultimate Risk is usually costly. Therefore, the effect of potential misstatement on the use and understanding of the financial statements must be included in the reduction considerations.

Finally, once an acceptable Ultimate Risk has been determined a statistical or nonstatistical sampling approach is selected. Either approach may be used to collect the necessary sufficient, competent evidential matter.

Purpose of Testing

Diagram B displays that whether the sampling approach is statistical or nonstatistical it can apply to all three types of audit tests: compliance, substantive, and dual purpose. Further, in all three types of tests two possible types of incorrect conclusions may be reached.

First, a test may lead the auditor to incorrectly accept the propriety of the client's internal accounting control system, or overrely on the client's financial statement numbers, or both. This error results from overdependence on test results. Audit effectiveness is impacted because, upon coming to an acceptable result, the auditor will test no further and the error will not be caught.

Second, a test may lead the auditor to incorrectly reject the propriety of controls, underrely on financial statement numbers, or both. The primary audit impact is on efficiency. Efficiency rather than effectiveness is impacted because when an auditor reaches a negative test conclusion the first reaction is to test further. Thus, the error will probably be caught, but at an increased audit expense.

Planning the Tests

Diagram C presents topics which are considered in planning all audit tests, whether a statistical or nonstatistical approach is used. For both compliance and substantive tests and combinations of the two, the relationship of the test to the audit objective is considered. This is consistent with the guidance given in SAS Number 31, "Evidential Matter."

Also, the maximum level of problems deemed to be acceptable, either a rate of deviations for compliance tests or a monetary cut-off point for substantive tests, is determined. Then, the allowable risk of overreliance, Beta Risk, is set. And, population characteristics such as risk and materiality are assessed.

With these determinations made the auditor may proceed to some final steps preliminary to testing. These decisions include:

1. Method of sample selection.
2. Selection of a representative sampling frame.
3. Selection of a statistical or nonstatistical approach.

If a nonstatistical approach is chosen very little additional guidance is provided in this SAS which can help the auditor. If a statistical approach is selected, however, substantial instructions may be referenced which are provided in Diagram D.

Directions for a Statistical Sampling Approach

When using statistical sampling the same types of procedures apply to both compliance and substantive tests, up to the point of drawing conclusions about the population based on sample results. These common procedures include the following:

1. Plan a random method of sampling.
2. Determine the appropriate sample size, tolerable error and Beta Risk.
3. Estimate the population size.
4. Select the item to be sampled, or consider implications if there is not an appropriate item.
5. Perform the mathematics which project the sample results to the population.

In making conclusions based on population projections considerations differ between compliance and substantive tests. Both types of tests

require comparison of the errors to the predetermined tolerable error. But, compliance conclusions incorporate professional judgment about quality of accounting records, quality of internal accounting control, nature of the deviations, purpose of the evaluation of the deviations, and plans for other related audit steps. Substantive test conclusions include considerations of the nature and cause of the errors, other aspects of the audit, and other contradicting or supporting evidence.

In sum, either statistical or nonstatistical sampling is acceptable, and neither is advocated by this SAS. Regardless of the method chosen it should be used properly. Finally, under either approach, many important judgment decisions are made by the auditor.

Conclusion

SAS 43, issued in August, 1982, delays for one year the effective date of SAS Number 39, and its important addition to current promulgations in auditing. However, even after an in-depth examination of the contents of this SAS 39, such as provided here, many issues remain unresolved regarding its implementation and use. One concern is materiality. Decisions regarding materiality will have to be made based on an auditor's experience and professional judgment, until more specific directions are promulgated. Another unresolved issue regards the application of SAS Number 39 using statistical and nonstatistical sampling.

Without question, statistical sampling is a method of implementing SAS Number 39. This SAS also provides guidance for nonstatistical sampling. Overall, no preference has been shown in the current SAS for one approach over the other. But, several directives were clearly communicated.

First, if statistical sampling is used, it must be used correctly. Although this sounds very simplistic, it is important. When statistics are used incorrectly the possibility of an erroneous audit conclusion is greatly increased. If an auditor has inadequate knowledge about the application of statistical techniques, judgment sampling may be more appropriate.

Second, if a judgment approach to

DIAGRAM A

SAS 39
Decision to Test and Approach to Testing
Objective of Audit Procedures

To obtain sufficient competent evidential matter to afford a reasonable basis for issuing an audit opinion. . . .

Is there justification for performing audit procedures on a test basis using a sample of the information available? Justification is primarily based on the reduced time and cost that a test basis entails. . . . Testing a sample embodies accepting a certain degree of uncertainty

- Yes → Perform audit sampling procedures. . . .
- No → Examine all data

Risk varies inversely with sample size, where the design relates to the efficiency chosen. . . .

Ultimate Risk (IC × AR × TD) is the uncertainty inherent in applying audit procedures. . . .

Factors affecting Ultimate Risk

1. audit procedures may not be appropriate to achieve specific objectives;
2. auditors may fail to recognize errors in documents
3. sampling risk, the sample may fail to truly represent the population

Is the Ultimate Risk acceptable? In other words, is the risk that the monetary error is greater than the tolerable error and the auditor fails to detect it acceptable to the auditor?

Considerations in making the decision include the cost which would be involved to reduce ultimate risk; and the effect of potential misstatement on the use and understanding of the financial statements

- Yes
- No → Take Steps to Reduce Ultimate Risk to acceptable level

Is a statistical or a nonstatistical sampling approach preferable? The choice must be made based on the cost and effectiveness of each approach under the circumstances. . . .

Nonstatistical sampling. . . .
May be appropriate for providing sufficient competent evidential matter

Statistical sampling. . . .
May be appropriate for providing sufficient competent evidential matter
Considerations include

1. Provides an efficient sample size
2. Provides quantitative measures of sufficiency of evidential matter
3. Provides method of evaluating sample results
4. Involves additional costs such as auditor training, sample design, selection of sample items

One in a Million

The following is quoted from the December, 1937 copy of a bulletin that was the first issue of the official, bimonthly bulletin of the American Woman's Society of Certified Public Accountants. At its inception it consisted of two pages typed on both sides, and a cover page. It was christened The Woman CPA, so the December, 1937 publication was really the original issue of the accounting journal you are reading. That "one in a million?"

"Today there are in the United States approximately 125,000,000 people and 125 women certified public accountants. Have you stopped to think that you are ONE IN A MILLION?

"This thought should impress you with the responsibility which is yours as a pioneer in the accounting field, still a virgin territory for women, altho a field peculiarly suitable to their talents. An outstanding characteristic of the successful accountant is an infinite capacity for detail, an essentially feminine faculty.

"To encourage the interest of women in the profession, and pass along to others the benefits of our experience, it was decided, at this year's meeting of the American Woman's Society of Certified Public Accountants, to form an auxiliary body, membership in which would be open to junior accountants and students of accounting; this society to work with and thru the American Woman's Society of Certified Public Accountants in furthering the interests of women accountants."

By October, 1938, (Vol. II, Copy 1) the issue had grown to three and one half pages, and reported the first meeting of the new organization, American Society of Women Accountants, in Indianapolis, in May, 1938.

Three prospective members attended the inaugural meeting; at publication of Vol. II, Copy 1, in October the membership had grown to fifty. "The quality of the membership," reported The Woman CPA, "in the American Society of Women Accountants is something to arouse the pride of every member of the American Woman's Society of Certified Public Accountants. Women in a variety of responsible positions have responded, and indications are that they will support the work of the Society enthusiastically."

DIAGRAM B

SAS 39

Purpose of Testing

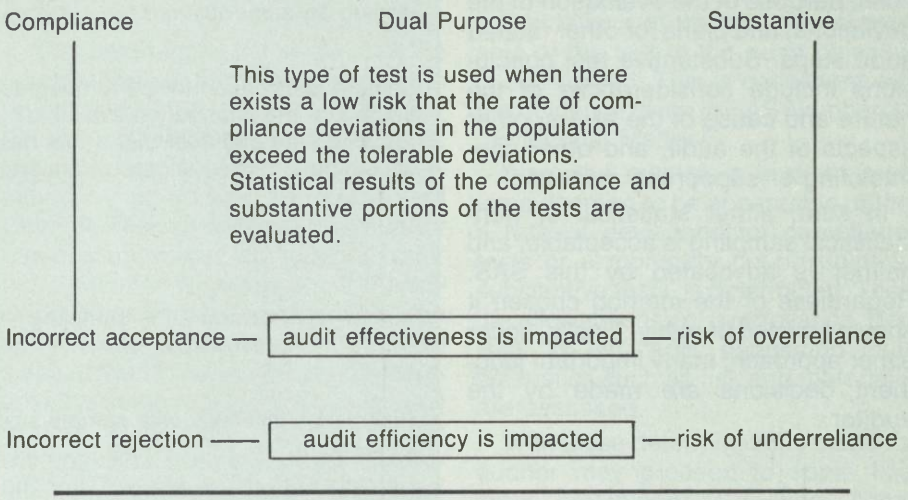
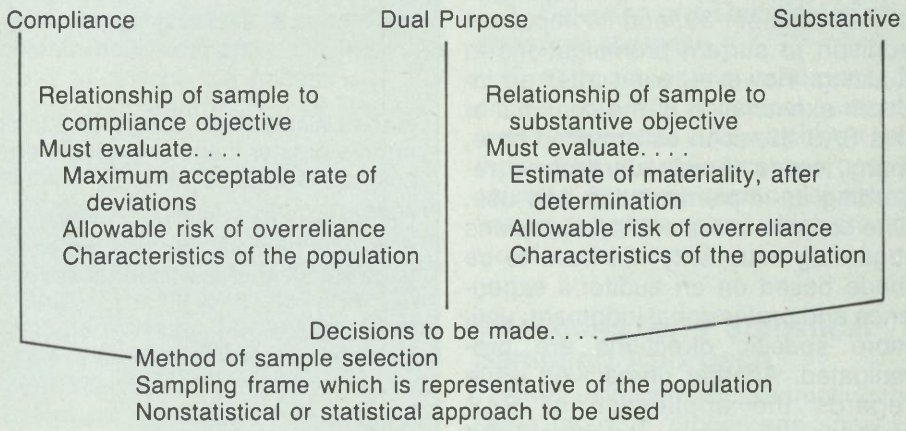


DIAGRAM C

SS 39

Planning the Tests



sampling is used certain decisions need to be consciously made. These decisions include such topics as population characteristics, risk of errors or irregularities, reliability of internal accounting control, etc. Based on the directions of SAS Number 39, and prior promulgations, it may be inferred that any decisions made should be documented in the workpapers. This may provide an unexpected benefit by requiring the auditor who is using judgment sampling to *consciously* assess the various factors.

In conclusion, SAS Number 39 provides significant direction to auditors for their sampling activities. It suggests an active planning approach to either judgmental or statistical sampling. It gives direction regarding various risk components and highlights the areas of both the client's system and of audit activities which need to be considered. It gives very specific instructions for the correct use of statistical sampling and for the decisions to be made under statistical and nonstatistical sampling. While SAS Number 39 provides significant direction for dealing with various audit issues, directives for materiality will perhaps come in future authoritative pronouncements.Ω

DIAGRAM D

Directions for a Statistical Sampling Approach

Random sampling is advocated
Decisions. . . .
Number of items in the sample
Tolerable error
Allowable Beta Risk
Estimate of population size

Compliance

Is there a sample item available to be tested?
Ability to test may depend on documentary evidence available, separation of duties

Yes

Perform the projection to the population. . . .
Considerations include

Other aspects

quality of accounting records
related internal control
purpose of the evaluation

Evaluation of deviations from control features

Other aspects

professional judgment
nature and cause of deviations
relationship of deviations to other audit phases

Tolerable rate of deviation

planned degree of reliance
likely rate of deviations
allowable risk of overreliance

No

Consider implications of inability to test. . . .

Substantive

Is there a sample item available which provides an ability to perform the test?

No

Yes

Perform the projection to the population. . . .
Considerations include

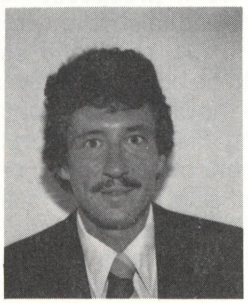
Qualitative aspects

nature and causes of misstatements
relationship to misstatements to other phases of audit
other relevant audit evidence

Comparison to Tolerable error

acceptable
unacceptable
indeterminate

CONCLUSION



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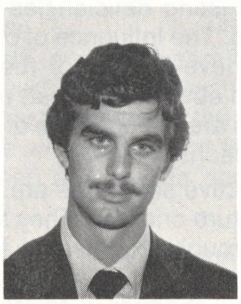

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